

A DESCRIPTION OF SOME TASMANIAN SKULLS.

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(Plates viii-xiii.)

I.—INTRODUCTION.

In July, 1910, the Trustees of the Australian Museum, Sydney, were good enough to send me the Tasmanian skulls in their collection for the purposes of measurement and description. The specimens consisted of two complete skulls and the upper portion of a third.

About the same time I was fortunate in obtaining a cast of a skull from the Tasmanian Museum, and also, from another source the skull and most of the bones of an aged Tasmanian woman that had not previously been described. These specimens form the subject of the present contribution.

To Mr. R. Etheridge, Curator of the Australian Museum, I am much indebted for assistance in sending the Museum skulls and giving their origin and history.

These descriptions were written nearly five years ago; but the leisure for putting the necessary finishing touches for publication has been long delayed.

The sagittal contours (Pl. xiii., fig. 2), accompanying the descriptions leave very much to be desired on account of the fragmentary and indefinite characters of some of the specimens and the consequent difficulty in some cases of determining, as a fixed point posteriorly, either the inion or the basion.

B. 3496. AUSTRALIAN MUSEUM.

(Plate viii., figs. 1-2 ; Plate ix., figs. 1-2).

This is a skull without the lower jaw. It is marked, "Tasmanian from Hobart." The Curator states that it was received from "Professor" T. H. Hume. Part of the right zygomatic arch is wanting. The bones are much polished, as if they had been subjected to a good deal of handling. The lines on them are distinct and the ridges are prominent. It appears to be the skull of an adult male. It weighs 20ozs. 139grs. avoirdupois.

Norma verticalis.—The skull is long. Although the parietal eminences stand out as fairly prominent bosses, the cranial outline is rather oblong or ovoid than pentagonal in form. The triangular area on the frontal bone in front of the bregma, noted by Turner in the specimens he has described, is fairly well marked ; and the flattened areas that bound it laterally pass backwards over the coronal suture to the parietals and stop near the posterior part of the parietal eminences. Anteriorly these flattened areas run between the frontal eminences and meet mesially between the glabella and the anterior end of a low broad ridge that runs forwards in the middle line from the bregma. The frontal eminences are well marked and are situated between the flattened areas mentioned above and the temporal curved lines. These curved lines on both sides run backwards and pass below the parietal eminences. Although they are double throughout nearly their whole length in front of and behind the stephanion, only the inferior portion or limb of the ridges seems to be represented. The anterior half of the sagittal suture runs in a narrow groove on a prominent crest, and there is very distinct flattening between it and the parietal eminences on both sides, corresponding with the prolongation backwards of the flattened areas on the frontal bone. The posterior half of the suture (Pl. viii., fig. 1) runs in the gradually widening groove which is depressed in the central part. The maximum widening and depression occur at the obelion. On the postero-lateral part of the right parietal bone there is a flattened area, 50 mm. by 30 mm. in size, due perhaps to injury or some pathological condition. Below the parietal eminences the side walls slope inwards to a minimum diameter of 111 mm., and then outwards to the inferior angle of the

parietal. The maximum transverse diameter, 122 mm., is at the parietal eminences. The asterionic diameter is 113 mm., but the diameter at the most prominent part of the posterior inferior angles, where the parietals articulate with the mastoids, is 115 mm. The stephanic diameter is 97 mm. The zygomatic arches stand out prominently when the skull is viewed from above the vertex at a distance of a metre from the eye. There is only one parietal foramen. It is on the left side, and is of medium size. The suprainial occipital squama bulges considerably; the infrainial portion is very flat.

Norma lateralis.—(Pl. viii., fig. 2). The forehead is fairly rounded. The glabella and superciliary ridges are distinctly marked and confluent, and the ridge on the right side is continuous with the super-orbital border (which is marked by a supra-orbital notch), while on the left side the ridge is imperfectly marked off from the border by a slight groove in which is the supra-orbital foramen. There may thus be said to be a continuous torus supra-orbitalis on both sides. The trigonum on each side is distinct and is slightly rounded, and the external orbital processes are thick. The supra-orbital depressions are shallow. The nasion is only slightly depressed; the internasal suture, measured in a straight line, is 17 mm. long; both nasal bones are of equal width, and measure 7 mm. at their lowest part. The profile outline of the nose is concave, but not greatly so, and the nasal bones form a slight ridge at their sutural junction. The parietal longitudinal arc is the longest, and the frontal and occipital arcs are almost equal in length. The mastoids are not well developed, and the skull rests behind on the posterior margin of the foramen magnum. On the left side there is a large epipteric bone; on the right side there are two. On each side a wedged-shaped wormian bone is inserted between the mastoid and squamous portions of the temporal bone. It may be noted here that on the right side there is a small wormian bone at the inner end of the horizontal suture, between the superior maxilla and the malar, posteriorly. The alisphenoid, at its narrowest part on both sides, measures 12 mm. Its outer surface is concave, but not deeply so. There is no vertical ridge at the junction of this bone with the malar on either side; but on both sides there is a vertical ridge on the temporal bone, from 4 to 6 mm. behind the speno-temporal suture.

Norma facialis.—(Pl. ix., fig. 1). The edge of the maxillary border of the nares, from the level of the lower margins of the nasal bones half-way to the level of the inferior tubinal, is grooved. The floor of the nose seems to be continuous with the incisive region by a smooth area; but closer examination shows that this area is crossed by a fine, thin, sharp, low ridge which runs on each side from the outer margin to the nasal spine, joining the parasternal line before reaching the spine. The nasal spine is distinct, though not large. The anterior nares are fairly wide, the nasal index being 52. The skull is therefore mesorhine, bordering on platyrrhine. The gnathic index, measured by Flower's method, is 104.3. The infra-orbital fossæ are fairly deep and are marked off from the canine fossæ by slight ridges. The incisive fossæ are shallow. The fronto-malar border of the orbit is somewhat thickened. The suture forming the continuation forwards of the infra-orbital canal is patent, and turns inwards behind the margin of the orbit. On the outer wall of the orbit, on both sides, the suture between the sphenoid and the malar runs downwards, courses for a little way along the anterior border of the spheno-maxillary fissure, and passes forwards and inwards on the floor of the orbit to become continuous with the maxillo-malar suture. A sutura verticalis is not present on either side, but on the left side a short suture runs nearly vertically from the orbital margin to an accessory infra-orbital foramen, whence a crack passes downwards and inwards to the borders of the "nasal wall." On the right side there are two accessory infra-orbital foramina, the lowest or normal foramen being separated from the middle one by a distinct ridge. The vertical diameter of the os planum is 11 mm. The orbital index is 85, which makes the skull mesoceme. The inter-orbital width is 22 mm.

Norma basilaris.—(Pl. x., fig. 2). The hard palate index is 123. There are traces of the maxillo-premaxillary sutures. The margins of the anterior palatine fossa are injured; but the fossa appears moderate in size, and is shaped like an isosceles triangle. On the right side of the palate, just in front of the palato-maxillary suture, there is a bridge of bone bounding a foramen. On the left side there are two accessory palatine foramina on the palate bone, a larger antero-external and a smaller postero-internal, separated by a well-marked ridge.

On the right side a similar condition exists. The roof of the palate is 8 mm. above the level of the alveolar borders. The fossæ between the pterygoid plates are shallow. On both sides the vaginal process is free. There is a suture between the basi-occipital and the basi-sphenoid. The posterior condylar fossa on the right side is shallow, and there are two minute foramina in it. The left fossa is still more shallow, and contains one medium-sized foramen. The pharyngeal tubercle is small, but distinct.

Teeth.—The dental arch is rounded in form. The teeth are all absent, but the sockets show well the form of the roots. The series is uninterrupted and regular. The sockets of the incisors, canines, and bicuspid are all single. The molar sockets show great regularity; each tooth had possessed two buccal roots and a single large lingual root. The formation of the roots of the wisdoms had not been completed, and probably these teeth had not completely erupted.

The sutures of the skull are well marked; none of them are obliterated at any part. Speaking generally, the coronal and lambdoid are simple, and the sagittal is denticulated. The appearance of a metopic suture is, I think, deceptive.

S. 404. AUSTRALIAN MUSEUM.

(Plate x., figs. 1-2; Plate xi., fig. 1).

This is a skull with the lower jaw. The Curator states that it was received from the Tasmanian Museum. Part of the left zygomatic arch is wanting. Twenty-three teeth are missing from their sockets. Otherwise the skull is in good preservation. It is the specimen referred to by Klaatsch,* as the skull of a female Tasmanian. It may be described as "adult." With the lower jaw it weighs 22oz. avoirdupois.

Norma verticalis.—The skull is ovoid in form, with a tendency to pentagonal. The parietal eminences are full and rounded. The triangular area in front of the bregma is fairly marked and evenly rounded, not ridged. The flattening

*Klaatsch—"The Skull of the Australian Aboriginal," p. 69 *et passim*.

on the parietals between the parietal eminences and the vertical mesial ridge is well marked on both sides, and it extends to the posterior limit of the eminences. The frontal eminences are fairly well marked, and are situated between the flattened boundaries of the triangular area and the temporal curved lines. These lines run across the most prominent parts of the parietal eminences. Both the superior and inferior limbs are represented, and the division takes place far forward on the frontal bone. The sagittal suture runs in a shallow groove, narrow in front, but growing gradually wider towards the lambdoid suture by reason of the separation of the low ridges which mark its lateral boundaries. Apart from this shallow grooving, the region of the obelion is uniformly rounded. The whole of the posterior parietal and asterionic regions is also rounded. The maximum transverse diameter, 136 mm., is between the parietal eminences and the parieto-squamous suture. At the eminences it is 136 mm., and at the parieto-squamous suture it is 135 mm. There is no distinct ridge at the lower angle of the parietal, such as exists in the skull marked B. 3496. The zygomatic arches stand out prominently when the vertex of the skull is viewed at a distance of a metre from the eye. There is only one parietal foramen. It is on the right side, and it is small in size. Apart from a slight bulging of the supra-inial portion immediately behind the lambdoid suture, the whole of the occipital bone is fairly uniformly rounded.

Norma lateralis.—(Pl. x., fig. 1.) The forehead is flattened above the glabella. The glabella and superciliary ridges are confluent, and are marked off from the supra-orbital border by a wide, shallow groove. The trigonum on each side is distinct, and the external orbital processes are thick. The supra-orbital depressions are shallow. The nasion is deeply and acutely depressed. The internasal suture, measured in a straight line, is 12 mm. long. The left nasal bone is 6 mm. wide at its inferior margin; the right, which is imperfect, had been 9 mm. wide. The profile outline of the nose is concave. The bones do not form a ridge at their sutural junction. The frontal longitudinal arc of the skull is the longest, and the parietal is next to it, the occipital being much the shortest. The mastoids are not well developed. The skull rests on the teeth and the occipital condyles. On the left side there is a

long epipteric bone, imperfectly cut off from the parietal; on the right side the four bones at the pterion meet at a point. On the right side a wedged-shaped wormian bone is inserted between the mastoid and the squamous portion of the temporal. On both sides the root of the zygomatic arch extends backwards and upwards on the temporal bone, forming a distinct ridge as far as the posterior limit of the bone. The wing of the sphenoid is small and narrow, measuring only about 9 mm. in width at the narrowest portion. It is very deeply excavated. The speno-malar suture on both sides is on a raised, roughened sharp ridge. On the left side the speno-temporal suture is on a small ridge. On the right side the sphenoid and temporal bones have sprung away from each other, but there seems to be a slight ridge at the lower part of the suture. On the left side the infra-temporal crest is scarcely perceptible; on the right side it is represented by a thin, sharp ridge running only partly across the bone, and in a direction more diagonal than usual. On each side the tuberculum spinosum is a small, thin, flat projection.

Norma facialis.—(Pl x., fig. 2). The condition of the floor of the nose is similar to that in the former skull. A thin, sharp ridge, the crista prænasalis of Klaatsch, double or grooved on the right side, runs from the outer margin to the nasal spine, joining the parasternal line before reaching the spine. As in the former skull, this condition is better marked on the right side. The spine is distinct, though not large. The anterior nares are pear-shaped; the nasal index is 58.1. The gnathic index by Flower's method is 98.9. The infra-orbital fossæ are abnormally deep. The canine and incisive fossæ are scarcely at all marked. The fronto-malar border of the orbit is somewhat thickened. In both orbits the suture forming the continuation forwards of the infra-orbital canal turns inwards behind the margin of the orbit, as in the other skull. As in the other skull also, on the outer wall of the orbit, the suture between the sphenoid and the malar runs downwards, courses for a little way along the anterior border of the speno-maxillary fissure, and passes forwards and inwards on the floor of the orbit to become continuous with the maxillo-malar suture. In the right orbit of this second skull there is a sutura verticalis which runs from the anterior extremity of the suture from the infra-orbital canal across the orbital margin to an accessory infra-orbital foramen above

and internal to the normal foramen. This accessory foramen is not visible in the direct facial view. The vertical diameter of the os planum is 11 mm. The orbital index is 71.7. The orbits appear square-shaped. The inter-orbital width is 18 mm.

Normabasilaris.—(Pl. xi., fig 1.) The hard palate index is 107. There are traces of the maxillo-premaxillary sutures—more marked than in the former skull. The anterior palatine fossæ are elongated and narrow. The fossæ between the pterygoid plates are very deep. On both sides the vaginal process is free. The posterior condylar fossa on the right side is deep and contains a fairly large foramen. There is no fossa on the left side; but there are two small foramina behind the condyle. The pharyngeal tubercle is not marked. The basi-occipital and basi-sphenoid are firmly united. There is a foramen pterygo-spinosum, the foramen in the external pterygoid plate being 7 mm. in diameter. The middle of the arch of bone bounding the foramen shows the remains of a suture between the two elements. The tympanic bones are small and incomplete.

Teeth.—The dental arch in this skull is much more elongated than in the other. The series of teeth is uninterrupted and regular. There are seven teeth present in the upper jaw. The first right bicuspid is but slightly worn. The first molars are considerably worn; the second molars only slightly. The right wisdom has come nearly into position; it looks downwards and outwards. The left wisdom is erupting; it looks downwards, much outwards, and slightly forwards. The measurements of the teeth, in millimeters, are as follows:—

				Antero-posterior diameter.	Transverse diameter.
1st premolar,	right,	upper	..	8	10
1st	„	left, lower	..	7	9
1st molar	right,	upper	...	11	11
1st	„	left, „	...	11	12
2nd	„	right, „	..	9	11
2nd	„	left, „	..	10	12
3rd	„	right, „	..	10	10
3rd	„	left „	...	10	10

On the right side there are two accessory palatine foramina on the palate bone, a larger antero-external and a smaller postero-internal, separated by a well-marked ridge of bone. On the left side there is one accessory foramen. The roof of the palate is 9 mm. above the level of the alveolar borders.

The sutures of the skull are well marked; none of them are obliterated in any part. The coronal is simple. The sagittal also is simple except for some denticulation. The lambdoid is partly denticulated or serrated; the left limb has one wormian bone in it; the right has two. There is a short much denticulated metopic suture.

1254. AUSTRALIAN MUSEUM.

(Plate xi., fig. 2).

This specimen consists of the upper portion of a skull. It is known to be Tasmanian, but the Curator does not know from whom it was received. The bones composing it are the frontal, the parietals, part of the occipital, and the squamous portion of the right temporal. The sutures are nearly all obliterated. The posterior portion is considerably weathered.

Norma verticalis.—The skull is long, and is ovoid in outline. The triangular area in front of the bregma is fairly well marked, and the flattened areas that bound it pass backwards to near the posterior boundaries of the parietal eminences. Anteriorly, they appear to stop at the level of the frontal eminences, and they are separated from each other by the rather wide and rounded medial ridge that runs forwards towards, but does not reach, the glabella. The frontal eminences are well defined, the outer margins being about 15 mm. from the temporal curved lines. These lines run backwards, and pass just above the most prominent parts of the parietal eminences. The sagittal suture is in a shallow groove on a well-marked medial ridge, and the groove widens out as it runs backwards, after the fashion described in the former skulls. Below the eminences the lateral walls are almost perpendicular; if anything, they bulge slightly. The maximum transverse diameter is about midway between the parietal eminences and the parieto-squamous sutures. The

zygomatic arches would have been easily visible when the skull was viewed from above in the usual fashion. On account of the amount of destruction of the outer table at the back of the skull, it is not possible to say whether any parietal foramen had been present. The supra-inial occipital squama bulges slightly.

Norma lateralis.—(Pl. xi., fig. 2). The forehead is rounded. The glabella and superciliary ridges are confluent. The ridges are marked off from the supra-orbital borders by well-marked grooves. At the inner part of the right groove is the supra-orbital foramen; on the left side there is a supra-orbital notch. The trigonum on the left side is flattened; on the right side it is rounded. The supra-orbital depressions are shallow. The nasion is somewhat sharply, but not deeply, depressed. It is difficult to state the exact lengths of the frontal and parietal arcs on account of the undefined position of the bregma.

There is a short, much-serrated metopic suture.

1826. CAST OF TASMANIAN SKULL (PRIVATE
COLLECTION).

This is a piece of particularly fine workmanship by Mr. Alfred J. Taylor, and shows very well the leading features and many of the finer details of the skull.

Norma verticalis.—The skull is long, and on account of the projection of the parietal eminences it shows a distinctly pentagonal outline. The triangular area in front of the bregma is fairly well marked, and the flattened areas on the frontal and parietal bones are very distinct. Posteriorly, they extend some distance behind the parietal eminences. Anteriorly, they run forwards between the frontal eminences, and meet mesially between the glabella and the anterior end of the rounded ridge that runs forwards in the middle line from the bregma. The frontal eminences are fairly marked between the flattened areas and the temporal curved lines. These

lines pass backwards over the most prominent part of the parietal eminences. The anterior part of the sagittal suture runs in a narrow groove on the median crest. The groove in this skull widens out posteriorly to a slight extent. One might say that the crest becomes somewhat flattened in the region of the obelion.

Norma lateralis.—The forehead is flattened. The glabella is not well marked, but the superciliary ridges are large and stand out like nodular masses. They are separated from the supra-orbital borders by shallow, indistinct grooves. On each side the trigonum is flattened, but the external orbital processes are thick. The supra-orbital depressions are well marked. The nasion is deeply depressed; the inter-nasal suture, measured in a straight line, is 11 mm. long. The profile outline of the nose is slightly concave, and the nasal bones form a slight ridge at their sutural junction. The frontal arc is 130 mm long; the parietal is 120 mm. The length of the occipital cannot be determined.

Norma facialis.—The nasal spine is distinct, though not large. The nares are fairly wide, the index being 57.4. The infra-orbital fossæ are very deep. The fronto-malar border of the orbit is thickened and rounded. The orbital index is 73.8.

The sutures are well marked. None of them are obliterated at any part. The coronal is simple; the lambdoid is partly denticulated; and the sagittal is denticulated in its whole length.

1665. PRIVATE COLLECTION.

(Plate xii., figs. 1-2; Plate xiii., fig. 1.)

This is the skull and lower jaw of an aged female. Part of the right zygomatic arch is wanting, and also a portion of the

right parietal bone, and the teeth are imperfect. Otherwise the skull is complete.

Norma verticalis.—The skull is long, and ovoid in outline, inclining, however, to the pentagonal shape on the right side. The triangular area in front of the bregma is not well marked, the frontal bone being on the whole uniformly rounded. The frontal eminences are well marked. Between the right eminence and the right limb of the coronal suture there is an oval dent 22 mm. by 15 mm. in size. The temporal curved lines run backwards over the most prominent parts of the parietal eminences. From the stephanion backwards they are distinctly double. The anterior half of the sagittal suture runs in a narrow groove on the top of a crest, which becomes distinct about 2 cm. behind the bregma. Between the ridge and the parietal eminence on each side is a characteristic flattened area. The flattening stops at about the level of the posterior part of the eminence. The posterior half of the sagittal suture runs in the gradually widening groove, which is more depressed in its central part. The maximum widening and depression occur at the obelion. Below the parietal eminences the walls slope slightly outwards. The zygomatic arches stand out prominently when the skull is viewed from above at a distance of a metre from the eye. There are two parietal foramina. The supra-inial occipital squama is rounded, but not bulging, and the infra-inial portion is flattened or only slightly rounded.

Norma lateralis.—(Pl. xii., fig. 1). The forehead is rounded. The glabella and superciliary ridges are well marked and confluent. On each side a shallow groove running outwards from the supra-orbital notch separates them from the orbital margins. The right orbital margin is more rounded than the left. The trigonum on each side is flat; the external orbital processes are thick. The supra-orbital depressions are shallow. The nasion is only slightly depressed; the inter-nasal suture, measured in a straight line, is 16 mm. long. Both nasal bones are of equal width, and measure 8 mm. at the lowest part. The profile outline of the nose is markedly concave, and the nasal bones form a distinct ridge at their sutural junction. The frontal longitudinal arc is the longest, and the parietal next in length. The mastoids are not well developed, and

the skull rests behind on the posterior margin of the foramen magnum. The alisphenoid, at its narrowest part on both sides, measures 16 mm. The outer surface is markedly concave. The suture between the alisphenoid and the temporal on each side is on a prominent ridge. On the left side there is a vertical ridge at some distance behind the junction of the malar with the alisphenoid.

Norma facialis.—(Pl. xii., fig. 2). On the right side the floor of the nose appears at first sight to be continuous with the incisive region by a smooth area, but a closer examination shows that this area is crossed by a thin, rounded, low ridge, which runs from the outer margin to the nasal spine, joining the parasternal line before reaching the spine. Further, the maxillary border of this side does not lose itself on the incisive region, as it appears to do on superficial inspection, but curves inwards and upwards, and reaches the nasal spine 5 mm. from its most anterior point. On the left side the maxillary border has a similar course. The parasternal line in the form of a distinct ridge, runs backwards, outwards, and upwards to come into very close relation to the maxillary border. There is no appearance on this side of a ridge corresponding to the thin, low ridge present on the right side. The nasal spine is distinct, though not large. The septum is deflected to the left side. The anterior nares are fairly wide, the nasal index being 57.4. The gnathic index measured by Flower's method is 106.5. The infra-orbital fossæ are very deep. A sutura verticalis is not present on either side. On the right side there is a small accessory infra-orbital foramen, not in the position usual for such a foramen, but below, instead of above, the normal one. This foramen is continuous with a depression passing transversely inwards and becoming continuous with a foramen in the wall of the antrum. The vertical diameter of the os planum appears to be 9 mm., but the superior border is difficult to determine on either side. The orbital index is 73.8; the interorbital width is 17 mm.

Norma basilaris.—(Pl. xiii., fig. 1). The hard palate index is 110. The sutures of the palate are all obliterated. The anterior palatine fossa is rounded in form; its posterior margin is bounded by a large knob-like projection which forms the

anterior termination of a rounded median ridge 16 mm. long. There are two accessory posterior palatine foramina on each side, those on the right side being larger than those on the left. The fossæ between the pterygoid plates are shallow. On each side a lower anterior portion is cut off from the rest by a vertical septum. The vaginal process is not free on either side.

The posterior condylar fossa on each side is shallow. On the right side there is a small foramen. The pharyngeal tubercle is not marked. On the anterior margin of the foramen magnum a "third condyle" is represented by a concave depression, the long or transverse diameter measuring 11 mm., and the short or antero-posterior being 3 mm.

Teeth.—The alveolar border is "arched" in form, the posterior portions being somewhat elongated. The teeth present are the lateral incisors, the canines, the second bicuspids, and the first right molar. The two incisors and the right canine are hollowed out by caries; the others are more or less worn. Apparently there was a gap between the central incisors. The right central had occupied the same socket as the right lateral. There is no trace of the wisdoms. The measurements of the teeth in millimeters are as follows:—

	Antero-posterior Diameter.	Transverse Diameter.
Canine, left	8	10
2nd bicuspid, right	8	11
" " left	8	12
1st molar, right	13	14

The five remaining teeth are too imperfect to give accurate measurements. The bicuspids on both sides appear to have been abnormal.

The roof of the palate is 8 mm. above the level of the alveolar borders.

The sutures of the cranium are all obliterated except the parieto-squamous, the outer parts of the lambdoid, and the part of the sagittal between the bregma and the obelion.

		A.	B.	C.	D.	E.
Collection Number.		Australian Museum. B. 3496.	Australian Museum. S. 404.	Australian Museum. 1254.	Private Cast. 1826.	Private Collection. 1665.
Age. Sex.		Adult Male.	Adult Female	Aged. ?	Adult Male.	Aged Female
Glabello-occipital length	...	184	179	189	189	177
Basi-bregmatic height	...	130	134	...	...	120
Vertical Index	...	70.6	74.8	...	...	67.7
Maximum frontal width	...	99	107	110	105	102
Minimum frontal diameter	...	94	91	92	89	91
Stephanic diameter	...	97	91	102	101	100
Asterionic diameter	...	113	109	111	106	100
Greatest parieto-squamous breadth	...	122 p.	136 p.	131 p.	140 p.	130 p.
Cephalic Index	...	66.3	75.9	69.3	74.	73.4
Horizontal circumference	...	500	505	522	512	487
Frontal longitudinal arc	...	121	127	...	130	130
Parietal	...	129	123	...	120	114
Occipital	...	120	110	...	...	111
Total	...	370	360	...	...	355
Vertical transverse arc	...	270	286	...	297	276
Maximum bi-mastoid diameter	...	114	121	...	122	116
Vertical transverse circumference	...	391	423	...	...	405
Length of foramen magnum	...	32	36	...	...	35
Width of foramen magnum	...	27	32	...	...	29
Basi-nasal length	...	96	92	...	...	92
Basi-aveolar length	...	92	91	...	...	98
Gnathic Index	...	95.8	98.9	...	...	106.5
Total longitudinal circumference	...	557	540	...	...	548
Inter-zygomatic breadth	...	114	120	...	130	113
Nasio-mental length	...	...	?100	...	...	?96
Nasio-alveolar length	...	58	55	...	...	60
Nasal height	...	48	43	...	51	47
Nasal width	...	25	25	...	26	27
Nasal Index	...	52.1	58.1	...	50.9	57.4
Orbital width	...	40	39	...	44	42
Orbital height	...	34	28	...	27	31
Inter-orbital width	...	22	18	...	...	18
Orbital Index	...	85	71.7	...	61.3	73.8
Palato-maxillary length	...	52	57	...	...	60
Palato-maxillary breadth	...	64	61	...	...	66
Palato-maxillary Index	...	123	107.	...	...	110.
Lower Jaw.	Symphysial height	...	30	...	...	25
	Coronoid	...	59	...	...	50
	Condylod	...	60	...	...	50
	Gonio-symphysial length	...	88	...	...	85
	Intergonial width	...	99	...	...	88
	Breadth of ascending ramus	...	30	...	...	28